Educational performance in twins - Is no different from that seen in singletons by adolescence

secondary care and interfaces such as rapid access chest pain clinics, where a surprising number of such patients develop cardiac endpoints.[10] This forces the question of whether the Fox and colleagues' risk score really is so different from that proposed for patients with myocardial infarction in the late 1960s,[11] or whether we should take a closer look at why risk assessment in general is so difficult to adopt in clinical practice.

Cornelia Junghans *research fellow in epidemiology*

(C.Junghans@ucl.ac.uk)

University College London Medical School, London WC1E 6BT

Adam D Timmis *professor of clinical cardiology*

Barts and the London NHS Trust, London E2 9JX

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Educational performance in twins

Is no different from that seen in singletons by adolescence

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In this week's *BMJ*, Christensen and colleagues[1] investigate two questions that are of popular and medical-scientific interest. Firstly, do twins have lower intellectual skills and educational achievements than singletons and, secondly, is birth weight associated with intellectual and educational performance? The authors look at the second question in both twins and singletons. They also open up the question of the link between intelligence and education, because the main comparator studies used IQ-type outcomes rather than educational performance.[2 3]

The study uses the Danish registration system linked with the Danish demographic database, the national hospital discharge register, the register of compulsory school completion assessments and test scores, and the Danish twin registry. They therefore had data on standard national educational outcomes, birth weights, and other demographic and parental variables for the entire relevant population of twins, and for a large representative sample of the comparable population of singletons.

Firstly, do twins have lower intellectual skills and educational achievements? Three recent studies of large samples of Scottish children born between 1921 and the 1950s strongly suggest they do. The Scottish mental surveys of 1932 and 1947 tested the IQ of most 11 year old Scottish children born in 1921 and 1936, respectively. In both surveys, twins scored about 5 IQ points (one third of a standard deviation) lower than singletons.[2] Father's social class, overcrowding in the home, height during childhood, school attendance, and number of people in the family did not account for the twin-singleton difference. The third study, in children from Aberdeen in the 1950s, found a similar twin-singleton difference in IQ test scores at ages 7 and 9.[3] It had the added benefit of comparing twins and singletons in the same families. The authors of that study found partial attenuation of the effect after adjusting for birth weight and gestational age.

However, Christensen and colleagues found similar test scores for twins and singletons. One possible reason for their findings, apart from possible differences between countries and populations studied, is the age at testing (at least five years later in the present study). This is supported by a Dutch study of adult twins, which found no significant difference in IQ between singletons and twins from the same families.[4] It is therefore possible that differences in ability or educational performance (or both) exist between twins and singletons as late as 11 years, but that they disappear by 16.

The comparison of Christensen and colleagues' findings with other recent large twin studies relies on there being a strong association between intelligence and educational performance. A large longitudinal representative study of more than 70 000 English schoolchildren supports this link.[5] General intelligence scores at age 11 years, derived from a battery of 10 separate cognitive tests, were highly correlated ($r > 0.8$) with general performance in the GCSE examinations at age 16. Interestingly, despite no differences in general intelligence being seen between boys and girls at age 11, girls performed considerably better in GCSEs at 16.

Secondly, is birth weight related to intellectual skills and achievements? Certainly, infants born well below the normal range of birth weights have some disadvantage.[6] Few studies have focused on the normal range of birth weights and term births, and the variability in the design of such studies does not allow a meta-analysis to be carried out. Overall, though, a

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narrative systematic review of such studies found a small positive association between birth weight and childhood (up to age 17) IQ that was not accounted for by parental social class.[7]

The study by Christensen and colleagues also finds a small effect of birth weight on educational performance. Even that small effect could be due to confounding, however. A recent study based on the US national longitudinal survey of youth 1979 found that the small significant association between birth weight and language and mathematical achievements in childhood and adolescence was largely accounted for by the mother's IQ score. This indicates that brighter mothers have brighter and heavier children.[8] If we put this potential confounding factor aside though, educational attainments are almost identical for each centile of birth weight (not absolute weight) within the singleton and twin groups. Christensen and colleagues conclude that the relative position of twins within their own group with respect to birth weight is most important. Such an effect is not unique to twins versus singletons or to birth weight and educational performance. Consider a comparable situation. A meta-analysis found a moderate sized correlation between brain volume and IQ[9]; men have, on average, bigger brains than women, yet men and women differ little in mean general intelligence.[10] Therefore, it is possible for birth weight and IQ to be related within both singletons and twins, and for twins to be on average lighter than singletons, and for twins and singletons not to differ in intellectual skills and achievements.

There remain unresolved issues about the possible effects of differences in geography, year of birth, and age. But the mechanisms by which these factors could eliminate twin-singleton differences is unclear. Consider year of birth, for example. Christensen and colleagues suggest that better, more recent obstetric care might be responsible. But it is tenable that such differences in care might also assist the survival of more at-risk babies generally—twins as well as singletons. Therefore, it is not clear whether better obstetric care would reduce, increase, or not affect any prior twin-singleton difference in mental ability. Despite these issues, Christensen and colleagues' study is comprehensive and well executed enough to reverse a trend in our thinking—that twins perform less well than singletons.

Ian J Deary *professor of differential psychology*

(I.Deary@ed.ac.uk)

Department of Psychology, University of Edinburgh, Edinburgh EH8 9JZ

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Pandemic obesity in Europe

A new charter from WHO promises concerted action to prevent and treat obesity

The threats to public health from widespread obesity are well known. So are the main solutions—we all need to move more and eat less. Evidence is still sparse, however, on the effectiveness, and, importantly, the cost effectiveness of large scale public health interventions to prevent and treat obesity. But a fifth of Europe's population is already obese, and obesity in adults accounts for up to 6% of direct health costs and more than 12% in indirect costs of shortened lives, reduced productivity, and lowered incomes.[1] Can Europe afford to wait for better evidence? The World Health Organization does not think so.

This month in Istanbul, WHO brought together from all corners of Europe ministers of health; ministers from other sectors such as education, sport, environment, transport, and agriculture; the food industry; public-private partners; and non-governmental organisations with the aim of taking real and immediate action on obesity. The meeting was more than a high level talking shop. The immediate and most obvious outcome was that all 53 states in the WHO European region adopted a new action plan into government policy. The plan, the European Charter on Counteracting Obesity, sets out what the region's states could and should do to halt and eventually reverse the pandemic.[2]

The charter calls for preventive actions including promoting breastfeeding; cutting salt, sugar, and fat in foods; promoting physical activity and better nutrition in schools; and designing urban areas for people and bicycles rather than cars. This is familiar advice on what to do, but the charter goes further by suggesting how to do it. And, while the proposals do not comprise what a management consultant would call truly SMART objectives—specific, measurable, achievable, realistic, and time specific—they do spell out important priorities and mechanisms for action (see box on bmj.com). The WHO European regional office is following up the Istanbul conference with a detailed action plan and will report on progress across the region every three years from 2010.

How will WHO know if European member states are making progress and, importantly, if any fall in the

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